HON 3183 Honors Seminar in the Humanities: "History & Policy of Climate Change"

307 Griffis Hall
Tue/Thu 9:30-10:45

Course #: Hon 3183

Credit hours: 3

Office hours: Tue/Thu 11-12:30, 234 Allen Hall

Instructor: Dr. Davide Orsini

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Course description:

What is climate change? When did scientists start talking about it? How did they define its causes and effects? To what extent does the international scientific community agree on how to interpret the data? This course provides an introduction to climate change: the history of the idea, the science behind it, and the politics surrounding it. The course is organized around five thematic units.

Unit one "**History of Climate Change: Early Observations and Science"** introduces students to the history of climate change as an object of scientific inquiry: what is the "greenhouse effect" and who coined the expression? How did early climate scientists measure and understand climate change? What were their assessments of its future effects? The last part of this unit examines crucial scientific debates on sustainable development and "limits to growth" that started in the early 1970s. In particular, we will explore how scientists use complex computer models and interpret data to predict the future of the Earth according to certain parameters.

Unit two "**Climate Science and Global Governance"** looks inside climate science and science policy. Guiding questions include: What will happen if current CO2 emissions and natural resource exploitation continue at the current rate? How do scientists assess climate change, including its past, present, and future consequences? How do they advice policymakers and participate in intergovernmental institutions, such as the Intergovernmental Panel on Climate Change (IPCC), to propose, organize, and develop global policy responses to climate change? Finally, we will address the problems that climate scientists face in communicating scientific evidence to the public.

Unit three "**Global warming and local effects"** focuses on the problems of risk perception, vulnerability, and adaptation of local communities to climate change effects. We will explore the interactions between the ecological and the cultural dimensions of climate change by contextualizing the variability of its manifestations in different places around the world. This will

allow us to analyze the complexities that are often hidden, reduced, and oversimplified by overarching narratives about climate change.

Unit four "**Reducing Carbon Emissions: Alternative Energies and Energy Politics"** explores past and current debates on energy transitions to examine the economic, environmental, and social costs of alternatives to fossil fuels. This discussion has, of course, implications for our everyday lives and the economic future of so-called developing countries that still rely heavily on fossil fuels.

Unit five "**Facing the Anthropocene: current policy issues**" addresses the "Anthropocene" as both a unit of analysis and a conceptual tool for understanding the policy and political implications of global warming. The unit will close with a discussion of the 2015 Paris Agreement.

The assignments for this course are based on both visual (documentaries, interviews with scientists and policy makers) and written material (articles, book chapters, excerpts from policy reports).

Prerequisites: open to anyone. No prior background in science, engineering, or history is required.

Learning objectives

Participants will acquire critical analytical skills for understanding current scientific and policy debates on climate change, and its political, social, environmental, and economic implications. The course also provides conceptual tools for thinking about long-term historical processes and their connections with current events, as well as global phenomena and localized impacts. Through short written responses to course materials students will improve their ability to actively engage with different sources of information. They will also be working with images, pictures, cartoons, and compose a couple of power point slides as alternatives to writing. At the end of the course participants will be expected to have a critical understanding of:

1) What climate change is; 2) Why it matters (causes and effects); 3) Current debates on proposed solutions and their implications; 4) The politics of science and technology; 5) Energy futures, alternatives to fossil fuels, and their costs/benefits.

Course policies and expectations

Reading: Students should buy only ONE BOOK: James R. Fleming, *Historical Perspectives on Climate Change* (New York: Oxford University Press, 1998). The rest of the material (articles, book chapters, videos, documentaries, and lecture slides) will be available under the "Resources" tab on Blackboard.

Participation and tardiness: Participation is very important for succeeding in this class. Absences should be justified in advance by sending a note to the instructor. After two justified absences any absence will affect your final grade. It is crucial that you organize your work so that you cover all the material and submit your assignments in a timely manner before each meeting.

Late work will not be considered. Only ONE late submission will be allowed during the course without grade penalties but after that, each late submission will have a negative impact on your final grade. If you have any serious reason for submitting your work late, please email me in advance.

Academic conduct and special accommodations: At Mississippi State and in professional settings generally, plagiarism is an extremely serious matter. **Please paraphrase wherever possible,** since this helps you process and understand what you have read. If truly necessary, you can quote published work, but quotations must be clearly marked and properly attributed. You may obtain copyediting assistance, and you may discuss your ideas with others, but all substantive writing and ideas must be your own or else be explicitly attributed to another, using a citation sufficiently detailed for someone else to easily locate your source.

All cases of plagiarism will be reported immediately.

Assignments and grading:

Reading responses 30%

Participants are required to post a short (300 words maximum) response to the reading material and other resources for each module on Blackboard. To make responses easier and more focused the instructor will provide reading questions one week in advance. Reading questions (usually three/four per week) are intended to give students some guidance about the main points they should focus on. Students are required to answer ONE reading question (recommended) but they can decide to address more than one if they want to.

Discussion questions: 20%

Participating in class discussion is an essential part of learning. You are expected to contribute regular, thoughtful comments that reflect completion of the assigned readings and engagement with the material. Also, asking good questions is a very important skill that is acquired through practice. Each of you will contribute at least 2 discussion questions during this course. When your turn comes you will pose your question to the class to start discussion on the reading material for the module.

Mid-term exam: 20%

The midterm exam will consist of a short essay based on prompts provided by the instructor about the material covered thus far.

Final paper and presentation: 30% (and extra credit)

A short (6-7 pages) final paper that critically addresses one of the problems explored during the course will complete your requirements. Each participant will submit a short proposal (300 words maximum) explaining the relevance and describing the particular aspects of the topic she/he wants to cover, using the course material. For each extra source (reading-video-documentary, clearly referenced) used to compile the final paper extra credits will be assigned.

Alternative to final paper (strongly encouraged!): Documentary (a detailed description of this

assignment will be provided in class.

Course Schedule

Part 1

History of Climate Change: Early Observations and Science

Week 1 – Climate change, Global Warming, and the Anthropocene: differences and definitions.

January 9-11 - Readings:

- Jonathan Foley, "Boundaries for a Healthy Planet," *Scientific American* 302, no. 4 (2010): 54-57

Videos:

- Earth: The Operator's Manual (PBS, 2011, 53 min). Ideally, watch and discuss with a classmate or friend, in full screen mode at 720p resolution. For more information about any point made in the video, see the annotated script, which provides sources for all claims (click the green "e" symbol to the left of any sentence in the script.)

Week 2 – The early measurements and conceptions of climatic change (18th and 19th centuries)

January 16-18 - Readings:

- James R. Fleming, *Historical Perspectives on Climate Change* (New York: Oxford University Press, 1998), Ch. 1-7, Pp. 11-93.

Week 3 – "Discovering" climate change: early definitions and explanatory models (19th and 20th century)

January 23-25 - Readings:

- James R. Fleming, *Historical Perspectives on Climate Change* (New York: Oxford University Press, 1998), Ch. 9-10, Pp. 107-137.

Week 4 – Computer models, forecast, and the emergence of the global climate change debate: 1960s-1980s

January 30/February 1 - Readings:

- Paul N. Edwards, "Representing the Global Atmosphere: Computer Models, Data, and Knowledge about Climate Change," in Clark E. Miller and Paul N. Edwards

(Eds.), *Changing the Atmosphere: Expert Knowledge and Environmental Governance*, Cambridge, MA, MIT Press, 2001. Pp. 32-65.

- Paul N. Edwards, *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming* (Cambridge MA: MIT Press, 2010), Ch. 14, Pp. 357-396.

Videos:

- Last Call , a historical review of the Limits to Growth debates (The Video Project, 2013, 5 min)
- Club of Rome, "What was the Message of 'The Limits to Growth'"? (5 minute Flash presentation — can take 15-30 seconds to start up)
- Dennis Meadows (one author of *Limits to Growth*), retrospective talk at the Smithsonian Institution (2012, 48 min). You can skip the intro by Roberto Peccei: Meadows' presentation starts at about minute 5.

Part 2
Climate Science and Global Governance

Week 5 – How climate science works

February 6-8 - Readings:

- Edwards, P. N. (2011), History of climate modeling. *WIREs Climate Change* Vol. 2: 128–139.
- Stephen Schneider (1997), *Laboratory Earth,* Basic Books. Ch. 3-4, Pp. 54-92.
- Global Warming Science, Union of Concerned Scientists

Suggested additional readings:

- Stephen Schneider, Climate Science Introduction

Videos:

- Philip Shabecoff, "Global Warming Has Begun, Expert Tells Senate," *New York Times,* June 24, 1988 (2 pp.)
- Andrew Revkin interview with James Hansen (NASA climate scientist) in 2008, looking back at Hansen's 1988 Congressional testimony and the future of energy policies, 10 min.

February 8 - Guest Lecture followed by Q & A

- Dr. Christopher Fuhrmann, Department of Geosciences, Mississippi State University

Week 6 – Governing climate change: the Intergovernmental Panel on Climate Change (IPCC)

February 13-15 - Readings:

- Shardul Agrawala, "Context and Early Origins of the Intergovernmental Panel on Climate Change," *Climatic Change* 39, no. 4 (1998): 605-620.
- Clark A. Miller. (2004). Climate science and the making of a global political order. In Sheila Jasanoff (Ed.), *States of Knowledge: The Co-Production of Science and the Social Order* (pp. 46-66). Routledge.
- Background on the UNFCCC: The International Response to Climate Change

Videos:

- How does the IPCC work? (International Geosphere-Biosphere Programme, 23 min)

Week 7 – Science and the public: facts and uncertainty in climate science

February 20-22 - Readings:

- Paul N. Edwards, *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming* (Cambridge MA: MIT Press, 2010), Ch. 15, Pp. 398-430.
- Naomi Oreskes, "Beyond the Ivory Tower: The Scientific Consensus on Climate Change," *Science* 306, no. 686 (December 3, 2004).
- Susanne C. Moser, "Communicating climate change: history, challenges, process and future directions." *WIREs Climate Change* Vol. 1, Issue 1 (January/February 2010): 31-53.

Videos:

- Naomi Oreskes, lecture about her 2010 book *Merchants of Doubt* (2010, 6 parts, total time ~50 min)
- Bruce Wielicki, TEDxNASA — Climate Change: Fact and Fiction (2011, 17 min)
- Thomas Stocker, Demystifying Three Climate Lies - The Road to Decarbonization TEDxBern: (2016, 19 min)

Part 3: Global warming and local effects

Week 8 – Scale and the problem of visibility

Feb. 27/March 1 – Readings:

- Dawn Stover, The dying polar bear as symbol of climate change, *Bulletin of the Atomic Scientist*, December 18, 2017.

- Frank Biermann et Al., "Down to Earth: Contextualizing the Anthropocene." *Global Environmental Change* 36 (2016): 341-350.

Videos:

- Climate Change Causes Insurers to Rethink Price of Risk (PBS News Hour, 2012, 8 min)
- David Saddington, Why I don't Care about Climate Change TEDxTEEN (2014, 20 min)

March 1, Screening *Climate Refugees*, by Michael Nash (2010)

Week 9 – Vulnerability, adaptation, resilience, and short-term opportunities

March 6-8 - Readings:

- W. Neil Adger et Al., "Cultural dimensions of climate change impacts and adaptation." *Nature Climate Change* Vol. 3 (February, 2013): 112-117.
- Michael Bravo, "Voices from the Sea Ice: The Reception of Climate Impact Narratives." *Journal of Historical Geography* 35 (2) 2009: 256-278.

- Adapting to Climate Change: Facing the Consequences, *The Economist* (2010)
- Cecilia Kang, From the Arctic's Melting Ice, an Unexpected Digital Hub, *The New York Times* (December, 2017).
- Six Ways We Can Adapt to Climate Change, Six scientists discussed their efforts to slow or even reverse changes brought by warming, *The New York Times* (December, 2017).
- Nicholas Casey, In Peru's Desert, Melting Glaciers are Godsend (Until They are Gone), *The New York Times* (November, 2017).

Videos:

- In Texas, Wind Power Means Jobs, InsideClimate News, 2017.
- Climate Change 2014: Impacts, Adaptation, Vulnerability, IPCC

Week 10 – Zooming in on local communities: California and the South East

March 20-22 - Readings:

- Bobby Magill, Climate Change Fingerprints are All Over California Wildfires *Scientific American* (July 2016).
- Isle de Jean-Charles's population resettlement, *The Guardian* (March 2016)
- Isle de Jean-Charles, Louisiana, Sinking: First Climate Refugees in the US, *National Geographic* (May 2016)
- Louisiana Fights the Sea and Loses, *The Economist* (August 2017)

Videos:

– March 20 - In class screening: Years of Living Dangerously - Showtime Series: Episode 4 "Ice & Brimstone."

March 22 - Guest Lecture followed by Q & A

- Dr. Diego Thompson-Bello, Department of Sociology at Mississippi State University

Part 4 - Reducing Carbon Emissions: Alternative Energies and Energy Politics

Week 11 – Nuclear power renaissance? Costs and benefits of a long planned solution

March 27-29 - Readings:

- Stewart Brand, *Whole Earth Discipline: An Ecopragmatist Manifesto* (Viking, 2009): chapter 4: "New Nukes."
- Amory Lovins, "Four Nuclear Myths: A commentary on Stewart Brand's *Whole Earth Discipline* and similar writings," 13 October 2009, posted on Rocky Mountain Institute's website.
- Holly Watt, Hinkley Point: the 'dreadful deal' behind the world's most expensive power plant, The Guardian, December 21, 2017.

Recommended extra readings:

- Paul Joskow & John E. Parsons, "The economic future of nuclear power," *Daedalus* (Fall 2009): 45-59.
- Henry Sokoloski, "The High and Hidden Costs of Nuclear Power," *Policy Review* 162 (Aug. & Sept 2010): 53-68.

Videos:

- Stewart Brand and Mark Z. Jacobson debate: Does the world need nuclear energy? filmed February 2010, posted June 2010 (23 min).

Week 12 – Examples of renewable energy sources and other solutions: pros and cons

April 3-5 – Readings:

- N.L. Panwara, S.C. Kaushikb, and Surendra Kotharia, "Role of renewable energy sources in environmental protection: A review," *Renewable and Sustainable Energy Reviews*, Vol. 15, n. 3, (2011), pp. 1513-1524.
- James R. Fleming, *Fixing the Sky: the Checkered History of Weather and Climate Control* (New York: Columbia University Press, 2010), Chapter 8: "Geoengineering."

- Alexander Dunlap, "'The Town is Surrounded:' From Climate Concerns to Life Under Wind Turbines in La Ventosa, Mexico," *Human Geography* 10 (2), 2017: 16-36.
- Dustin Mulvaney, "Opening the Black Box of Solar Energy Technologies: Exploring Tensions Between Innovation and Environmental Justice." *Science as Culture* 22 (2), 2013: 230-237.

Additional sources:

– Downsides and Perils of Fracking
– George W. Huber and Bruce E. Dale, "Grassoline at the Pump." *Scientific American* 301, (2009): 52-59.

Videos:

- Offshore Wind Farms in the US
- Carbon Capturing, (11 Min).
– Renewables in the US, ETOM mini-series on climate change and renewable energy, 2012. (53 Min).
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Week 13 – Energy transitions: obstacles, open questions, and ethical implications.

April 10-12 – Readings:

- Clark A. Miller. 2014. The ethics of energy transition. Pp. 1-5 Proceedings of the IEEE Symposium on Ethics in Engineering, Science, and Technology. IEEE Symposium on Ethics in Engineering, Science, and Technology. Chicago, Illinois.

Videos:

- "Crude: The Incredible Journey of Oil" (condensed version: Part 1, Part 2, Part 3, total about 30 min).
- Amory Lovins: A 40-year plan for energy, filmed March 2012, posted May 2012 (27 min).
- Lord Nicholas Stern, professor at the London School of Economics and former World Bank chief economist, lecture on the risks, costs, and opportunities of climate change (The Greening Campaign, UK, 2013, 40 min).

Part 5 – Facing the Anthropocene: current policy issues

Week 14 – Contextualizing the Anthropocene

April 17-19 – Readings:

- Steffen, Will, Jacques Grinevald, Paul Crutzen, and John McNeill. "The Anthropocene: Conceptual and Historical Perspectives." *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 369, no. 1938 (2011): 842–867.
- Lewis, Simon L., and Mark A. Maslin. "Defining the Anthropocene." *Nature* 519, no. 7542 (2015): 171–80.

Videos:

- IPCC Working Group I: The Physical Science Basis of Climate Change 2013 (2013, 9 min)

Week 15 – The Paris agreement

April 24 – Readings:

- R. Meyer, "A Reader's Guide to the Paris Agreement" The Atlantic Monthly (December 2015).
- UNFCCC, Paris Agreement: essential elements

Videos:

TBD

Final exam: Date TBD.